

CLAIMS

1. A method of fractionating corn comprising:
 - a) tempering a quantity of corn kernels;
 - b) cracking the corn kernels;
 - 5 c) threshing the cracked corn kernels;
 - d) separating the corn particles into a first fraction which is above a threshold size and a second fraction which is below a threshold size ;
 - e) separating the second fraction into a large grit fraction and a medium grit fraction;
- 10 f) gravity-separating the large grit fraction into large endosperm and large germ/pericarp/endosperm; and
- g) gravity-separating the medium grit fraction into medium endosperm and medium germ/pericarp/endosperm.
2. The method according to claim 1 wherein the corn kernels are cleaned prior to tempering.
- 15 3. The method according to claim 1 wherein during step (b), the corn kernels are cracked into fewer than 10 large pieces.
4. The method according to claim 1 wherein the cracked corn kernels are aspirated following step (c) to remove fine endosperm particles.
- 20 5. The method according to claim 1 wherein the first fraction is returned to step (c) and re-threshed.
6. The method according to claim 1 wherein the large germ/pericarp/endosperm is subjected to impact means to reduce the endosperm to flour and the floured endosperm is recovered by aspiration.
- 25 7. The method according to claim 1 wherein the medium germ/pericarp/endosperm is subjected to impact means to reduce the endosperm to flour and the floured endosperm is recovered by aspiration.
8. The method according to claim 6 wherein the impact means is a flaking roll.
- 30 9. The method according to claim 7 wherein the impact means is a hammermill.
10. The method according to claim 1 wherein the large grit fraction is further separated by size prior to step (f).

11. The method according to claim 10 wherein the large grit fraction is separated by size using a length separator.
12. A system for fractionating a crop of interest comprising:
 - a cracking unit for cracking the crop of interest into 3-10 pieces;
 - 5 a breaking unit for threshing the crop of interest into smaller fragments;
 - a first separator for separating the fragments into oversize fragments which are re-threshed and processing fragments;
 - a second separator for separating the processing fragments into 10 large fragments and medium fragments according to size and shape, as discussed above;
 - a large density separator for separating the large fragments into a large heavy fraction and a large light fraction; and
 - a medium density separator for separating the medium fragments 15 into a medium heavy fraction and a medium light fraction.
13. The system according to claim 12 wherein the crop of interest is selected from the group consisting of corn, sweet corn, maize, pop corn, sorghum, rice, buckwheat, wheat, milo, lentils, peas, soybeans, and chick peas.